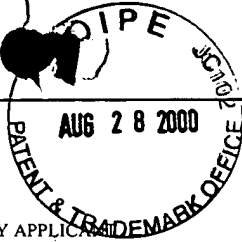


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## U.S. PATENT DOCUMENTS

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## FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
	AL							
	AM							
	AN							
	AO							
	AP							

## OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

QA	Rosa PA, Schwan TG, A specific and sensitive assay for the Lyme disease spirochete Borrelia burgdorferi using the polymerase chain reaction, Journal of Infectious Disease, vol. 160, pp. 1018-1029
AR	U.S. Application Serial No. 08/373,455 filed January 17, 1995
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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
MT	AA	3,791,932	2/12/74	Schurs et al.			
	AB	3,949,064	4/6/76	Bornstein et al.			
	AC	4,174,384	11/13/79	Ullman et al.			
	AD	4,358,535	11/9/82	Falkow et al.			
	AE	4,554,101	11/19/85	Hopp			
	AF	4,578,770	3/25/86	Mitani			
	AG	4,596,792	6/24/86	Vyas			
	AH	4,599,230	7/8/86	Milich et al.			
	AI	4,599,31	7/8/96	Milich et al.			
	AJ	4,601,903	7/22/86	Frasch			
	AK	4,603,102	7/29/86	Himmelmann et al.			
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	AN	0 036 776 B1	9/30/81	EPO				
	AO	0 243 333 A2	10/28/87	EPO				
	AP	0 366 238	5/2/90	EPO				
	AQ	WO 88/01875	3/24/88	WIPO				
	AR	WO 90/04411	5/3/90	WIPO				
	AS	WO 93/08299	4/23/93	WIPO				

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AT	Adam T, Gassmann GS, Rasiyah C, Göbel UB. 1991. Phenotypic and genotypic analysis of <i>Borrelia burgdorferi</i> isolates from various sources. Infection and Immunity, 59: 2579-2585.
AU	Adelman JP, Hayflick JS, Vasser M, Seeburg PH. 1983. In vitro deletional mutagenesis for bacterial production of the 20,000-dalton form of human pituitary growth hormone. DNA. 2(3):183-93.
AV	Anderson JF, Magnarelli LA, McAnich JB. 1988. Journal of Clinical Microbiology, 26: 2209-2212.
AW	Arimitsu Y, Takashima I, Yoshii Z, Higashi Y, Kameyama S, Mizuguchi J. 1991. Journal of Infectious Diseases, 163: 682-683.

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AD		Baranton G, Postic D, Saint Girons I, Boerlin P, Piffaretti J-C, Assous M, Grimont PAD. 1992. Delineation of <i>Borrelia burgdorferi</i> sensu stricto, <i>Borrelia garinii</i> sp. nov., and group VS461 associated with Lyme borreliosis. International Journal of Systematic Bacteriology, 42: 378-383.
AE		Barbour AG, Burgdorfer W, Grunwaldt E, Steere AC. 1983. Antibodies of patients with Lyme disease to components of the <i>Ixodes damini</i> spirochete. Journal of Clinical Investigation, 72: 504-515.
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AG		Barbour AG. 1984. Immunochemical analysis of Lyme disease spirochetes. The Yale Journal of Biology and Medicine, 57: 581-586.
AH	✓	Barbour AG. 1986. Polymorphisms of major surface proteins of <i>Borrelia burgdorferi</i> . Zbl Bakt Hyg, 263: 83-91.
AI	✓	Barbour AG. 1988. Laboratory aspects of Lyme borreliosis Clinical Microbiology Reviews, 1: 399-414.
AJ	✓	Barthold SW, Bockenstedt LK. 1993. Passive immunising activity of sera from mice infected with <i>Borrelia burgdorferi</i> . Infection and Immunity, 61: 4696-4702.
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AO	✓	Burgdorfer W, Barbour AG, Hayes SF, Benach JL, Grunwaldt E, Davis JP. 1983 Lyme disease - a tick borne spirochetosis
AP	✓	Burman N, Bergström S, Restrepo BI, Barbour AG. 1990. The variable antigens Vmp7 and Vmp21 of the relapsing fever bacterium <i>Borrelia hermsii</i> are structurally analogous to the VSG proteins of the African trypanosome. Molecular Microbiology, 4: 1715-1726.
AQ	✓	Canica MM, Nato F, duMerle L, Mazie JC, Baranton G, Postic D. 1993. Monoclonal antibodies for identification of <i>Borrelia afzelii</i> sp. Nov. associated with late cutaneous manifestations of Lyme borreliosis. Scandinavian Journal of Infectious Diseases, 25: 441-448

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## OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

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AE	✓	Coleman JL, Benach JL. 1987. Isolation of antigenic components from the Lyme disease spirochete: their role in early diagnosis. Journal of Infectious Diseases, 155: 756-765.
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AG	✓	Crea R, Kraszewski A, Hirose T, Itakura K. 1978. Chemical synthesis of genes for human insulin. Proceedings of the National Academy of Sciences USA. 75(12):5765-5769.
AH	✓	Dressler F, Whalen JA, Reinhardt BN, Steere AC. 1993. Western blotting in the serodiagnosis of Lyme disease. The Journal of Infectious Diseases, 167: 392-400.
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AM	✓	Fikrig E, Barthold SW, Marcantonio N, DePonte K, Kantor FS, Flavell RA. 1992. Roles of OspA, OspB, and flagellin in protective immunity to Lyme borreliosis in laboratory mice. Infection and Immunity, 60: 657
AN	✓	Fikrig E, Barthold SW, Marcantonio N, DePonte K, Kantor FS, Flavell RA. 1992. Roles of OspA, OspB, and flagellin in protective immunity to Lyme borreliosis in laboratory mice. Infection and Immunity, 60: 657
AO	✓	Fraser CM, Casjens S, Huang WM, Sutton GG, Clayton R, Lathigra R, White O, Ketchum KA, Dodson R, Hikey EK, Gwinn M, Dougherty B, Tomb JF, Fleischmann RD, Richardson D, Peterson J, Kervalage AR, Quackenbush J, Salzberg S, Hanson M, van Vugt R, Palmer N, Adams MD, Gocayne J, Venter JC et al., 1997. Genomic sequence of a Lyme diseases spirochaete, <i>Borrelia burgdorferi</i> . Nature, 390: 580-586.
AP	✓	Gassmann GS, Jacobs E, Deutzmann R, Göbel UE. 1991. Analysis of <i>fla</i> gene of <i>Borrelia burgdorferi</i> GeHo and antigenic characterization of its gene product. Journal of Bacteriology, 173: 1452-1459.

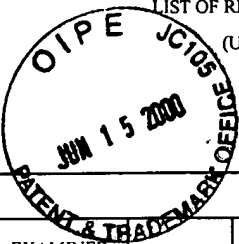
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)						
AD	✓	Goeddel DV, Heyneker HL, Hozumi T, Arentzen R, Itakura K, Yansura DG, Ross MJ, Miozzari G, Crea R, Seeburg PH. 1979. Direct expression in <i>Escherichiacoli</i> of a DNA sequence coding for human growth hormone. <i>Nature</i> . 281(5732):544-548.				
AE	✓	Goodman JL, Jarkovich P, Kramber JM, Johnson RC. 1991. Molecular detection of persistent <i>Borrelia burgdorferi</i> in the urine of patients with active Lyme disease. <i>Infection and Immunity</i> , 59: 269-278.				
AF	✓	Grodzicki RL, Steere AC. 1988. Comparison of immunoblotting and indirect enzyme-linked immunosorbent assay using different antigen preparations for diagnosing early Lyme disease. <i>Journal of Infectious Diseases</i> , 157: 790-797.				
AG	✓	Hess et al. 1968. <i>Advances in Enzyme Regulation</i> , 7: 149-166.				
AH	✓	Hitzeman RA, Clarke L, Carbon J. 1980. Isolation and characterization of the yeast 3-phosphoglycerokinase gene (PGK) by an immunological screening technique. <i>Journal of Biological Chemistry</i> . 255(24):12073-12080.				
AI	✓	Holland MJ, Holland JP. 1978. Isolation and identification of yeast messenger ribonucleic acids coding for enolase, glyceraldehyde-3-phosphate dehydrogenase, and phosphoglycerate kinase. <i>Biochemistry</i> . 17(23):4900-4907.				
AJ	✓	Honavar N, Schaible UE, Galanos C, Wallich R and Simon MM. 1994. A 14,000 MW lipoprotein and a glycolipid-like structure of <i>Borrelia burgdorferi</i> induce proliferation and immunoglobulin production in mouse B cells at high frequencies. <i>Immunology</i> 82: 389-396.				
AK	✓	Hopp TP, Woods KR. 1981. <i>Proceedings of the National Academy of Sciences USA</i> , 78:3824-3828				
AL	✓	Itakura K, Hirose T, Crea R, Riggs AD, Heyneker HL, Bolivar F, Boyer HW. 1977. Expression in <i>Escherichia coli</i> of a chemically synthesized gene for the hormone somatostatin. <i>Science</i> . 198(4321):1056-63,				
AM	✓	Jameson BA, Wolf H. 1988. <i>Computer Applications in the biosciences</i> , 4:181-186.				
AN	✓	Jones EW. 1977. Proteinase mutants of <i>Saccharomyces cerevisiae</i> . <i>Genetics</i> , 85(1):23-33.				
AO	✓	Jonsson M, Noppa L, Barbour AG, Bergström S. 1992. Heterogeneity of outer membrane proteins in <i>Borrelia burgdorferi</i> : comparison of <i>osp</i> operons of three isolates of different geographic origins. <i>Infection and Immunity</i>				
AP	✓	Katona LI, Beck G and Habicht GS. 1992. Purification and immunological characterization of a major low-molecular-weight lipoprotein from <i>Borrelia burgdorferi</i> . <i>Infect. Immun.</i> , 60: 4995-5003.				
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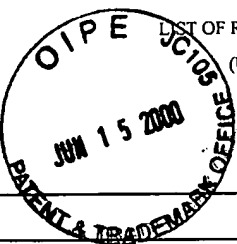


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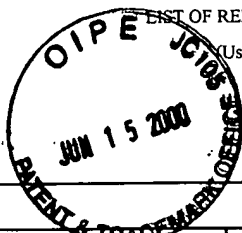
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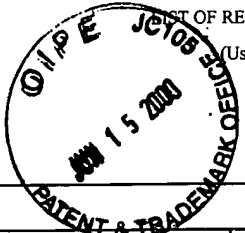
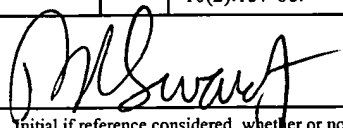
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)							
<div style="font-size: 2em; font-family: cursive;"> </div>	AD	<	Kingsman AJ, Clarke L, Mortimer RK, Carbon J. 1979. Replication in <i>Saccharomyces cerevisiae</i> of plasmid pBR313 carrying DNA from the yeast <i>trp1</i> region. <i>Gene</i> . 7(2):141-52.				
	AE	/	Kryucheynikov VN, Korenberg EI, Scherbakov SV, Kovalevsky YV, Levin ML. 1988. Identification of <i>Borrelia</i> isolated in the USSR from <i>Ixodes persulcatus schulze</i> ticks. <i>Journal of Microbiology, Epidemiology and Immunobiology</i> , 12: 41-44 (this reference is in Russian. Please note the English language abstract and advise, if a full translation is needed).				
	AF	/	Kyte J, Doolittle RF. 1982. <i>Journal of Molecular Biology</i> , 157:105-132.				
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	AH	/	Lebech AM, Hindersson P, Vuust J, Hansen KJ. 1991. Comparison of in vitro culture and polymerase chain reaction for detection of <i>Borrelia burgdorferi</i> in tissue from experimentally infected animals. <i>Journal of Clinical Microbiology</i> , 29: 731-737.				
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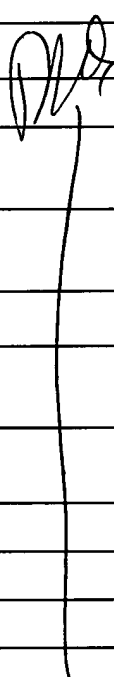
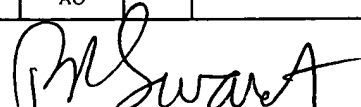
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	AD	/		Marconi RT, Garon CF. 1992. Phylogenetic analysis of the genus <i>Borrelia</i> : a comparison of North American and European isolates of <i>Borrelia burgdorferi</i> . Journal of Bacteriology, 174: 241-244.			
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	AF	/		Marconi RT, Samuels DS, Schwan TG, Garon CF. 1993. Identification of a protein in several <i>Borrelia</i> species which is related to OspC of Lyme disease spirochetes. Journal of Clinical Microbiology, 31: 2577-2583.			
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	AI	/		Nielsen P E <i>et al.</i> , 1991, Science 254: 1497-1500.			
	AK	/		Norris SJ, Carter CJ, Howell JK, Barbour AG. 1992. Low-passage-associated proteins of <i>Borrelia burgdorferi</i> B31: Characterization and molecular cloning of OspD, a surface exposed, plasmid-encoded lipoprotein. Infection and Immunity, 60: 4662-4672.			
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EXAMINER  <div style="font-size: 1.5em; font-family: cursive;">M. Swan</div>				DATE CONSIDERED  <div style="font-size: 1.5em; font-family: cursive;">12-20-01</div>			
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AF	EP 054057	05/05/93	Europe				
AG	WO 95/12675	05/11/95	WIPO				
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